

Laboratory Safety Program

Environmental Health & Safety

Environmental Health and Safety

Department Overview

Research & Environmental

Chemical Safety

Biological Safety

Radiation & Laser Safety

Hazardous Waste Management

Laboratory Inspection Program

Air Permitting

Storm Water

Fire & Life Safety

Fire Detection /Suppression

Renovation & New Construction Support

Building & Housing Unit Inspections

Residential Fire Drills

Hot Work Permitting

Campus Event Support

General Safety

Occupational Safety

Construction Safety

Workers' Compensation

Accident Investigations

Risk Management / Insurance

Defensive Driving

Laboratory Safety Program

Chemical Safety Policy - [Procedure 8-11](#)

PROCEDURE OBJECTIVE

The purpose of this procedure is to:

- prevent personal injury from exposure to chemical hazards;
- prevent damage to The University of Texas at Arlington (UTA) property;
- prevent chemicals and chemical waste from polluting the environment;
- comply with applicable federal, state, and local guidelines and requirements; and
- establish efficient and effective use of chemicals.

SCOPE

This procedure applies to all faculty, staff, students and other individuals working in research laboratories and with hazardous chemicals on the UTA campus.

Laboratory Safety Program

Chemical Safety Policy - Procedure 8-11

RESPONSIBILITIES

Environmental Health and Safety Office (EH&S)

- Perform inspections of all chemical laboratories and shop areas
- Provide consultation services
- Maintain laboratory safety manuals
- Remove chemical waste when needed
- Test safety equipment
- Provide employees with information and training
- Approve all chemical donations prior to acceptance
- Approve requests to retain expired chemicals

Laboratory Safety Program

Chemical Safety Policy - Procedure 8-11

RESPONSIBILITIES

Principal Investigators (PIs) of Laboratories and Shop Supervisors of Departments that Utilize Chemicals

- Ensure that employees and students comply with rules and procedures
- Provide Site-specific training as part of the Hazard Communication Program
- Submit requests for chemical waste removal
- Submit requests to retain expired chemicals
- Conduct physical count of chemical inventory and locations every 12 months

Laboratory Safety Program

Chemical Safety Policy - Procedure 8-11

PROCEDURES

- Section I. Maintenance of [Laboratory Safety Manual](#)
- Section II. Laboratory Evaluation Program
- Section III. Chemical-Free Areas in Campus Laboratories
- Section IV. Hazardous Waste Disposal (Regulated and Universal)
- Section V. Chemical Spill Response and Reporting

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PROCEDURES

- Section VI. Safety Equipment Requirements and Testing (Fume Hoods, Safety Showers, Eye Washes)
- Section VII. Compliance with the Hazard Communication (HazCom) / Resource Conservation and Recovery Act (RCRA)
- Section VIII. Approval and Acceptance of Chemical Donations
- Section IX. Management of Chemical Inventory
- Section X. Promotion of Safety of Minors in the Laboratory

Laboratory Safety Program

Chemical Safety Policy - Procedure 8-11

Section II. Laboratory Evaluation Program

EH&S evaluates all laboratories and shops that use hazardous chemicals and/or generate hazardous waste. Laboratory evaluations are conducted per the [SOP-UTA Laboratory Evaluations](#).

- These evaluations ensure that:
- proper laboratory safety practices and procedures are being utilized;
- chemicals are being stored and labeled correctly;
- chemical inventory is being maintained, hazardous waste is being collected and disposed of properly;
- safety equipment (fume hoods, eyewashes, safety showers) has been tested;
- proper personal protective equipment (PPE) is being worn; and
- good housekeeping practices are being followed.

Laboratory Safety Program

Chemical Safety Policy Procedure 8-11

Section III. Chemical-Free Areas in Campus Laboratories

Eating, drinking, handling contact lenses, applying cosmetics, and storing of food for human consumption is not permitted in University laboratory work areas. In cases where the need is justified and it can be demonstrated that proposed locations are sufficiently separated from actual laboratory work areas, EH&S will consider and review for approval a designated Chemical-free Area where laboratory staff may eat, drink, apply cosmetics, and conduct other personal activities not related to laboratory operations. Chemical-free areas in campus laboratories will be determined as described in [SOP - Chemical-free Areas in UTA Laboratories](#), and can be requested by submitting [Form 8-106, Application for Chemical-free Area Designation](#) to EH&S for approval.

Laboratory Safety Program

Chemical Safety Policy - Procedure 8-11

Section VII. Compliance with the Hazard Communication (HazCom) / Resource Conservation and Recovery Act (RCRA)

All employees and research students must also complete the online [Hazard Communication and Waste Management \(Academic/research\)](#) training prior to working with or being exposed to chemicals. The training includes information on the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Employees and research students must also complete site-specific training for their individual workplaces prior to working with or being exposed to chemicals. This training must be provided by the laboratory PI or shop supervisor. The PI or shop supervisor must document using the [Laboratory Site-Specific Training Sign-in Sheet](#) or [Non-Laboratory Site-Specific Training Sign-in Sheet](#).

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Section VII. Compliance with the Hazard Communication (HazCom) / Resource Conservation and Recovery Act (RCRA)

LABELING SECONDARY CONTAINERS

Lab Safety Evaluation requirement: Secondary containers, other than ones for immediate use, are labeled with the identity of their contents and the hazards associated with their contents.

Informational: The Hazard Communication Standard and NFPA 45 require that labels for secondary containers must contain two key pieces of information: the identity of the hazardous chemical(s) in the container (e.g., chemical name as it appears on Safety Data Sheet) and the hazards present (see pictograms below). No abbreviations or chemical formulas unless listed on a posted cross reference sheet (see example below). Micro vials and other small containers of similar contents that are compatible that will not support a conventional label can be identified with a numbering system and stored in a properly labeled collection vessel. Maintain a master log of the numbered containers within the laboratory.

GHS Hazard Pictograms and Related Hazard Classes

Expanding Bomb - Explosives - Self-reactives - Organic Peroxides	Corrosion - Skin corrosion/irritation - Eye damage - Corrosive to metals	Flame Over Circle - Oxidizing gases - Oxidizing liquids - Oxidizing solids
Gas Cylinder - Gases under pressure	Environment - Aquatic toxicity	Skull & Crossbones - Acute toxicity (oral or dermal)
Exclamation Mark - Irritant (eye, skin) - Skin irritation - Acute toxicity - Nausea, dizziness - Respiratory tract irritant - Hazardous to ozone layer (non-mandatory)	Health Hazard - Carcinogen - Mutagenicity - Reproductive toxicity - Respiratory sensitizer - Target organ toxicity - Hazardous to ozone layer (non-mandatory)	Flame - Flammable liquids - Flammable solids - Flammable gases - Self-heating - Self-reactive - Organic peroxides

● Containers marked with green dots are non-hazardous.

NOT ACCEPTABLE **ACCEPTABLE**

NOT ACCEPTABLE **ACCEPTABLE**

NOT ACCEPTABLE **ACCEPTABLE**

NOT ACCEPTABLE **ACCEPTABLE**

Example of cross reference sheet

Abbreviation	Full Name	Hazard	Hazard
EtBr	Ethidium Bromide	Genotoxic	
IPA	Isopropyl Alcohol	Flammable, Irritant	
EtOH	Ethanol	Flammable, Irritant	
MeOH	Methanol	Flammable, Toxic	
THF	Tetrahydrofuran	Flammable, Suspected Carcinogen	
KOH	Potassium Hydroxide	Corrosive	
HNO3	Nitric Acid	Oxidizer, Corrosive	
HCl	Hydrochloric Acid	Corrosive, Irritant	
DTT	Dithiothreitol	Irritant	
NaCl	Sodium Chloride	NON-HAZARDOUS	●
dNTP	Deoxynucleotide	NON-HAZARDOUS	●
TRIS	Tris(hydroxymethyl)-aminomethane	NON-HAZARDOUS	●
DSW	Dextrose 5% water	NON-HAZARDOUS	●

For more information and pictogram labels please contact EH&S at ehsafety@uta.edu or 817-272-2185.

Laboratory Safety Program

Chemical Safety Policy - Procedure 8-11

Section IX. Management of Chemical Inventory

UTA utilizes the [Chemical Environmental Management System \(CEMS\)](#), a barcode-based system, to record and manage information about the quantity, location, and properties of chemical stock, biological agents, and hazardous waste disposal requests. This system has the capability to automate recordkeeping and waste removal requests, allow campus laboratories to share materials, send email messages, etc. Functions include:

- Adding Chemical Containers to Inventory
- Updating Inventory of Chemicals
- Periodic Physical Inventory of Chemicals
- Waste Removal Requests
- Expired Chemicals
- Emergency Response Use with UTA Police Dispatch

Laboratory Safety Program

Chemical Safety Policy - Procedure 8-11

FORMS

- [Laboratory Safety Evaluation Checklist - Chemical](#)
- Chemical Donation Approval Request ([Form 8-103](#))
- [Biological Lab Safety Evaluation Checklist](#)
- [Shop Safety Evaluation Checklist](#)
- CEMS Inventory Discrepancy ([Form 8-102](#))
- Application for Laboratory Chemical-free Area Designation ([Form 8-106](#))

Laboratory Safety Program

Chemical Safety Policy - Procedure 8-11

As indicated in the University's [Chemical Safety Procedure \(8-11\)](#), the Environmental Health & Safety Office (EH&S) is responsible for evaluating all campus laboratories that use hazardous chemicals and/or generate hazardous waste. These evaluations ensure that:

- proper laboratory safety practices and procedures are being utilized;
- chemicals are being stored and labeled correctly;
- chemical inventory is being maintained, hazardous waste is being collected and disposed of properly;
- safety equipment (fume hoods, eyewashes, safety showers) has been tested;
- proper personal protective equipment (PPE) is being worn; and
- good housekeeping practices are being followed.

Laboratory Safety Program

Most Common Deficiencies

- Food and/or drinks present in the laboratory. “Non-compliant – “Critical””
- Principal Investigator has completed annual chemical inventory.
- Peroxide forming chemicals are not dated when received and opened, and stored beyond their expiration date. “Non-compliant – “Critical””
- Secondary containers, other than ones for immediate use, are labeled with the identity of their contents and the hazards associated with their contents.
- Lack of, or inappropriate, personal protective equipment (PPE) such as lab coats, safety glasses, and gloves, etc. “Non-compliant – “Critical””
- Improper waste management, such as open waste containers and/or waste containers not labeled properly.

Laboratory Safety Program

Most Common Fire Code and Electrical Deficiencies

- Poor housekeeping practices in the laboratory, such as excessive and unsafe accumulation of combustibles such as cardboard boxes and paper.
- Exits and walkways must be kept clear to ensure means of egress. There should be a clear path of 36 inches.
- Combustibles are not stored within 24" of the ceiling in non-sprinklered buildings or within 18" of the sprinkler head drop distance from the ceiling.
- Permanent use of extension cords; multi-plug adapters are used or power strips plugged into other power strips.
- There is clear access to the electrical breaker panel.

Laboratory Safety Program

Laboratory Evaluation Program - Standard Operating Procedure

The purpose of the Laboratory Evaluation Program is to promote safe laboratory practices and assist campus laboratories in complying with federal, state, local and institutional requirements. EH&S will conduct laboratory evaluations in each laboratory area at UTA in support of this goal.

Laboratory Safety Program

Laboratory Evaluation Program - Standard Operating Procedure

Throughout the SOP the term laboratory means all facilities covered by the EH&S Laboratory Evaluation Program at UTA, which include the following:

- Research and teaching laboratories such as chemistry, biology, engineering, physics, geology, biomedical engineering, kinesiology, etc.
- Animal and plant facilities such as animal holding rooms, surgical suites, greenhouses, etc.
- Environmental laboratories such as ecology outdoor nature laboratory, etc.
- Other facilities posing similar risks that are routinely surveyed by EH&S, such as ceramics and art studios, academic shops, and non-academic shops.

Laboratory Safety Program

Laboratory Evaluation Program - Standard Operating Procedure

Background

Research/teaching laboratories and academic/non-academic shops use a variety of hazardous materials (e.g., chemical, biological, radiological) and potentially hazardous equipment (e.g., centrifuges, x-rays, lasers) that carry the potential for causing physical injuries (e.g., via pressurized vessels, vacuum systems) or general fire or life safety hazards (e.g., via flammable materials, electrical/electronic equipment). These substances, equipment, and activities are governed by an array of local, state, and/or federal regulations.

Laboratory Safety Program

Laboratory Evaluation Program - Standard Operating Procedure

Procedures

- Frequency- EH&S will conduct evaluations in each laboratory at least once per calendar year. Evaluations may be conducted more frequently as deemed necessary by EH&S based on risk factors, laboratory conditions, compliance history, etc. Additionally, laboratories that have approved chemical-free areas per [SOP – Chemical-free Areas in UTA Laboratories](#) may be evaluated more frequently.
- Scheduling- EH&S will notify department chairs at least two weeks prior to evaluations on a building-by-building basis. The department chairs are responsible for notifying responsible individuals in their department that have a laboratory assignment in each building. Laboratories that have reached 20 plus points per section 5 of the Laboratory Evaluation Program SOP, may be subject to unannounced evaluations.

Laboratory Safety Program

Laboratory Evaluation Program - Standard Operating Procedure

Procedures

- Evaluation Preparation- Laboratory evaluations are based on the [UTA Laboratory Safety Evaluation Checklist–Chemical](#), [Biological Laboratory Safety Evaluation Checklist](#), and [Shop Safety Evaluation Checklist](#). These documents may be used to assist the laboratory users in preparing for laboratory evaluations.
- Evaluation Process- Initial Evaluation - an EH&S staff member will conduct an unannounced comprehensive safety evaluation of the laboratory. While performing the evaluation each laboratory user-related item reviewed will be determined to be one of the following:
 - Compliant
 - Non-compliant
 - Non-compliant – Critical

Laboratory Safety Program

Laboratory Evaluation Program - Standard Operating Procedure

Laboratory Evaluation Rubric

<http://www.uta.edu/campus-ops/ehs/chemical/docs/UTA-lab-evaluation-rubric.pdf>

Item inspected	Compliant	Noncompliant	Critical Noncompliant
Hazard Communication Act/General Safety			
Questions for approved laboratories with "Chemical Free Area" designation.			
Evidence of eating, drinking, handling contact lenses, applying cosmetics, storing food for human consumption, food preparation, and/or dish washing was not found in the "Hazardous Area".	Evidence of eating, drinking, handling contact lenses, applying cosmetics, storing food for human consumption, food preparation, and/or dish washing was not found in the "Hazardous Area".	This item will only be a critical violation.	Evidence of Eating, drinking, handling contact lenses, applying cosmetics and/or storing food for human consumption was found in designated "Hazardous Area" locations. This item must be in compliance to maintain approval for the laboratory "Chemical-Free Area" designation.

Laboratory Safety Program

Laboratory Evaluation Program - Standard Operating Procedure

Reporting

EH&S will issue a report outlining any findings within three (3) business days after the date of evaluation. The report will be provided to the responsible individual. For academic/research laboratories, if “Non-compliant – Critical” deficiencies are noted, the appropriate department chair/head will also be provided a copy of the evaluation report.

Laboratory Safety Program

Laboratory Evaluation Program - Standard Operating Procedure

Response to Findings

The responsible individual must correct any deficiencies and document the correction by responding in writing. This response should include the actions taken to remedy the findings and outline steps taken to prevent their reoccurrence. The response requirements will be dictated by the severity of the findings as described below.

Laboratory Safety Program

Laboratory Evaluation Program - Standard Operating Procedure

Response to Findings

The evaluation report notes all findings as “Compliant”.

- No response from the responsible individual is required.

Or

The evaluation report contains at least one finding that is “Non-compliant”.

- The responsible individual must respond in writing within five (10) business days of receiving the laboratory evaluation report. The response must be in writing and sent to EH&S.

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Laboratory Safety Program

Laboratory Evaluation Program - Standard Operating Procedure

Response to Findings

Or

The evaluation report contains at least one finding that is “Non-compliant - Critical”.

- The responsible individual must respond in writing within two (3) business days of receiving the laboratory evaluation report. The response must be in writing and sent to EH&S with copies to the department chair/head.

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Laboratory Evaluation Program - Standard Operating Procedure

Follow-up Visit

If “Non-compliant – Critical” deficiencies are identified during the laboratory evaluation, EH&S will schedule a follow-up visit with the responsible individual 1-2 weeks after the laboratory evaluation report is issued. An immediate follow-up visit may be requested by EH&S if the situation dictates. The follow-up visit allows EH&S staff to consult with the responsible individual and confirm that corrective actions have been implemented.

Laboratory Safety Program

Laboratory Evaluation Program - Standard Operating Procedure

Repeat Deficiencies

EH&S will monitor laboratories and report laboratories that continuously conduct unsafe practices or have continued items of noncompliance. Laboratory user-related findings will be tracked by EH&S for a period of three (3) laboratory evaluations. Each laboratory evaluation finding of “Non-compliant” and “Non-compliant – Critical” will be assigned points per the table below.

Occurrence	“Non-compliant” Finding	“Non-compliant – Critical” Finding	Overdue Response to Findings*
First	1 point	2 points	4 points
Second	2 points	4 points	
Third and subsequent	4 points	8 points	

* The response must be in writing to EH&S, include the actions taken to remedy the findings, and outline steps taken to prevent their reoccurrence.

Laboratory Safety Program

Laboratory Evaluation Program - Standard Operating Procedure

Repeat Deficiencies

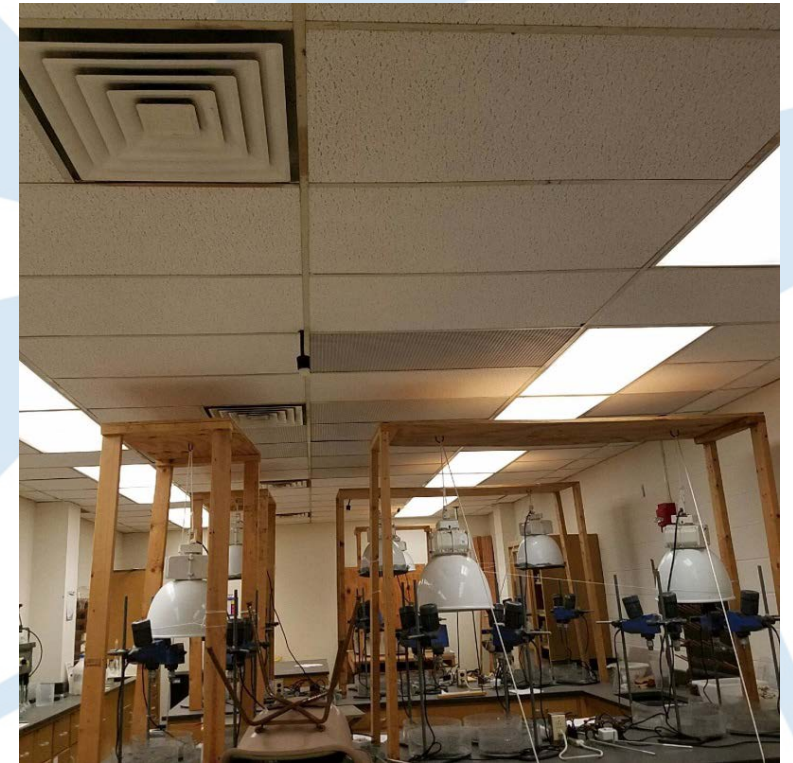
If the cumulative point total for the three (3) most recent laboratory evaluations reaches 20 to 40 points, EH&S will warn the responsible individual of potential enforcement actions by notifying them in writing via email and copying the department head/chair and appropriate dean/vice president.

If the cumulative point total for the three (3) most recent laboratory evaluations exceeds 40 points, EH&S will refer the issue to the Vice President for Research and the Vice President for University Administration and Campus Operations. They will make a determination regarding any enforcement action for the responsible individual on a case-by-case basis. Enforcement actions may include the suspension of access to the laboratory, suspension of access to funds, fine to the department, etc.

Laboratory Safety Program

Common Laboratory Safety Deficiencies

Storage of combustibles must not be within 24" of the ceiling in non-sprinklered buildings or within 18" of the sprinkler head drop distance from the ceiling in sprinklered buildings.



Laboratory Safety Program

Common Laboratory Safety Deficiencies

Permanent use of extension cords has been eliminated. No multi-plug adapters are used or power strips plugged into other power strips.



Laboratory Safety Program

Common Laboratory Safety Deficiencies



Laboratory Safety Program

Common Laboratory Safety Deficiencies





Environmental Health & Safety

817-272-2185

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